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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,712	10/06/2003	Shoupu Chen	86575SHS	2888

7590 03/20/2007  
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EXAMINER
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PATEL, JAYESH A

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/679,712

Applicant(s)

CHEN ET AL.

Examiner

Jayesh A. Patel

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 9 is/are rejected.
- 7) ☒ Claim(s) 6-8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Response to Arguments***

1. Applicant's amendment filed on 01/29/07 has been entered and made of record.
2. Applicant's arguments filed on 01/29/07 have been fully considered but they are not persuasive due to the following reasons.

Applicant alleges the above arguments with respect to Meron, regarding Claims 2 and 9 still applies on [,] "Page 5 Line 25 - Page 6 Lines 10", and the examiner disagrees.

3. Regarding Claim 9, In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. not teaching automatic finding of features associated with images using an algorithm) are not recited in the rejected claim 9. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Meron also discloses image correlation in (Col 6 Lines 11-19). Capsi also discloses registration and correlation at (Col 1 Lines 33-36).

4. Regarding Claim 2, In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. not teaching automatic finding of features associated with images using an algorithm) are not recited in the rejected Claim 2. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The applicant also argues that Caspi discloses image registration as "a process of alignment for facilitating comparison and medical diagnosis by overlaying and aligning like images and not one-to-one correlation is not true. Meron discloses image correlation in (Col 6 Lines 11-19). Capsi also discloses registration and correlation at (Col 1 Lines 33-36).

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meron et al. (US 6950690) hereafter Meron and Caspi (US 6909794) hereafter Caspi.

**5. Regarding Claim 1,** Meron discloses a digital image processing method for aligning in vivo images from multiple passes of a gastrointestinal tract to aid in diagnosing gastrointestinal disease at (Col 6 Lines 11-19), comprising the steps of: **a)** conducting multiple passes of in vivo imaging within the gastrointestinal tract in (Col 3, Lines 9-16). **b)** Forming a registration bundle of metadata for each of the multiple passes. "Generating a map"(Col 3, Lines 10-13).

Registration is necessary in order to be able to compare and map images. A Metadata describes the content of the Images and helps in Image file management. Therefore forming a registration bundle of metadata will generate a map of images, it's location and other metadata attached with the images. Meron also discloses element **c)** identifying features of an in vivo image using digital image processing that enable diagnosis of the gastrointestinal disease at (Col 6 Lines 11-19). The fact that Meron discloses the use of CCD camera system (Fig 4 element 46) and the Video data processor 14 (Fig 1 Element 14) shows the video data is digitally processed.

Meron however does not disclose **d)** automatically selecting possible image features of an in vivo image from the registration bundle associated with one pass, using algorithmic classification; and **e)** retrieving corresponding images from another pass based on prior selection of the possible image features.

Caspi discloses aligning of digital images at d) automatically selecting possible image features of an in vivo image from the registration bundle associated with one pass, using algorithmic classification at (Col 5 Lines 44 – 67) and e) retrieving corresponding images from another pass based on prior selection of the possible image features at (Col 6 Lines 20-45 and Col 5 Lines 51-67). The process is automatic and all it needs is two sets of images from multiple passes. The algorithm in Figure 4 at block 402 registers images by retrieving the images. Caspi also discloses registering scans over time automatically using algorithm at (Col 5 Lines 53-58). Caspi discloses a method and system for registering images that can reduce computation time through sampling or without always to analyze an entire data set at (Col 3 Lines 52-55). Both Meron and Caspi are analogous art and from the same field of endeavor, therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the teachings of Caspi with the imaging means of Meron for the above stated reasons.

6. Regarding Claim 2, Meron and Caspi discloses the digital image processing method to meet the limitations of claim 1. Meron further discloses the limitations b1) retrieving an anatomical identity label associated with the Gastrointestinal tract and b2) retrieving a global index label corresponding to each in-vivo imaging pass at (Col 3 Lines 44-48); b3) retrieving a local index label with respect to a specific anatomical section within the Gastrointestinal tract at (Col 2, Lines 12-15

and Col 2 Lines 30-32); b4) Calculating global travel distance within the gastrointestinal tract in (Fig 2 and 3 and Col 2 Lines 17-22).

Meron however does not disclose, b5) Forming at least one registration bundlette from information in steps b1-b4 and b6) Forming a registration bundle from the at least one registration bundlette, wherein the at least one registration bundlette includes at least a combination of the anatomical identity label, the global index label, the local index label and the global travel distance.

Caspi discloses b5) Forming at least one registration bundlette from information in steps b1-b4 and b6) Forming a registration bundle from the at least one registration bundlette, wherein the at least one registration bundlette includes at least a combination of the anatomical identity label, the global index label, the local index label and the global travel distance (Col 5, Lines 44-67 and also Col 6 Lines 3-7,28-38).

Meron uses imaging means and Caspi uses the automated Registration algorithms for finding and diagnosing the correct location of the pathology in the gastrointestinal tract. Registration is a necessary step in the medical imaging. The task becomes more tedious and leads to erroneous results, if the images are aligned and compared manually. Therefore the method of automatic registration as taught by Caspi is, faster and accurate. Caspi also discloses a system and method of registering images that can reduce computation time through sampling or without always having to analyze an entire data set at (Col 3 Lines 52-55), Therefore it would have been obvious for a person, skilled in the art at the time

the invention was made, to have used the capsule (60) for capturing images, Register and align the images to facilitate comparison and diagnosis of the disease for the above reasons.

7. Regarding Claim 3, Meron and Caspi disclose a digital image processing method claimed in claim 1. Caspi disclose wherein selection of the possible image features includes the step of selecting an in vivo image using a global index in (Col 5 Lines 59-67). A first part global similarity transformation uses global index for registration. Caspi also discloses a system and method of registering images that can reduce computation time through sampling or without always having to analyze an entire data set at (Col 3 Lines 52-55). Both the Meron and Caspi are from the same field of endeavor and are analogous art. Therefore it would have been obvious for a person, skilled in the art at the time the invention was made, to have used the capsule (60) for capturing images, Register and align the images to facilitate comparison and diagnosis of the disease for the above reasons.

8. Regarding claim 4, Meron and Caspi discloses a digital image processing method claimed in claim 1. Caspi discloses wherein selection of the possible image features includes the step of selecting an in vivo image by browsing a plurality of images at (Fig 4 Block 402).



**9.** Regarding Claim 5, Meron and Caspi discloses a digital image processing method claimed in claim 1. Caspi discloses wherein selection of the possible image features includes the step of selecting an in vivo image using an anatomical identity and a local index in (Fig 4 Blocks 404 and 406).

**10.** Regarding Claim 9, Meron discloses elements,

**b)** A template source for detecting in vivo images that indicates a diseased gastrointestinal tract and sending the in vivo images to the image alignment processor in (Col 3 Lines 32-39 and Col 4 Lines 9-11).

**c)** A display for displaying a plurality of aligned in vivo images (Col 6 lines 29-34).

**d)** A means for transmitting the plurality of in vivo images at (Col 6 lines 19-24).

**e)** A means for storing metadata associated with the plurality of in vivo images (Col 6, Lines 24-29).

**f)** A means for communicating selected in vivo images across a network (Col 6, Lines 24-29).

**g)** A means for outputting the plurality of aligned in vivo images at (Col 6, Lines 39-44).

**h)** A user interactive means for inputting and/or controlling the metadata and/or the plurality of in vivo images at (Col 6, Lines 61-63).

**a)** Meron also discloses, selecting and retrieving possible indexed features of a plurality of in vivo images from multiple image capturing passes. Meron also discloses image correlation in (Col 6 Lines 11-19). Meron however does not

explicitly disclose and is silent about, the possible indexed features enable one to correctly align the plurality of in vivo images from multiple image capturing passes according to images captured at substantially similar positions in a gastrointestinal tract.

Caspi discloses, automatic registration for medical scans of similar anatomical structures (Col 1 Lines 33-36, Col 5 Lines 50-67 and Col 6 Lines 31-38). Caspi also discloses a digital format of images at (Col 2 Lines 10-25). Caspi also discloses a system and method of registering images that can reduce computation time through sampling or without always having to analyze an entire data set at (Col 3 Lines 52-55). Both the Meron and Caspi are from the same field of endeavor and are analogous art. Therefore it would have been obvious for a person, skilled in the art at the time the invention was made, to have used the capsule (60) for capturing images, Register and align the images to facilitate comparison and diagnosis of the disease for the above reasons.

***Allowable Subject Matter***

Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**11.** Regarding Claim 6, Meron and Caspi disclose the digital image processing method to meet the limitations of claim 3. Caspi discloses,

**d1)** retrieving anatomical identity based on global index (Fig 4 Block 404, Col 5, Lines 47-50 and Lines 59-62).

**d3)** locating the images corresponding to the anatomical identity (Col 2 Lines 10 –14 and Lines 26-35).

**d4)** Locating a set of images in a neighborhood of computed local travel distance (Fig 4 Blocks 402,404,406 and Col 6, Lines 53-58).

Meron also discloses computing a location and hence the distance traveled by the capsule (Col 2 Lines 12-15 and Lines 31-35), however does not disclose the

**d2)** Computing a local travel distance using a global travel distance and the anatomical identity, hence the element **d2) is the allowable subject matter.**

**12.** Regarding Claim 7, Meron and Caspi discloses the digital image processing method to meet the limitations of claim 4, and Caspi discloses the limitations d1, d2, d4 and d5 as explained in claim 6, However the limitation **d3)** is not disclosed and **is allowable subject matter.**

**13.** Regarding Claim 8, Meron and Caspi discloses the digital image processing method to meet the limitations of claim 5, and Caspi discloses the limitations d2, d3 as explained in claim 6, However the limitation **d1)** is not disclosed and **is allowable subject matter.**

### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayesh. A. Patel whose telephone number is 571-270-1227. The examiner can normally be reached Mon –Fri 7.00am-4.30 pm (5-4-9) schedule. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu. Can be reached on 571-272-5026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jayesh Patel  
03/09/07

JP

JINGGE WU  
SUPERVISORY PATENT EXAMINER

